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Waste management, regional planning, and transportation planning -- with a focus on Nagoya and Tokyo.

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1. SUMMARY AND CONCLUSIONS

This report describes a visit to Japan in July, 1990. Some of the many purposes of the visit are set out in the next section. A common aim was to learn more about aspects of the management of Japanese urban areas and to present the findings in a manner relevant to the interests of decision-makers in the Toronto region and elsewhere in Canada. The main focuses were on waste management, on regional planning and transportation, and on the training of senior officials. The main conclusions are these:

- *Japan is not the model of waste management practice it is often claimed to be.* In the cities studied, disposal capacity is being rapidly exhausted. Incineration predominates as the main method of handling waste. The other main disposal method is dumping in dyked areas of the sea. Recycling, except recycling of office paper, is not much in evidence, and the systems for recycling office paper appear unable to cope with the avalanche of material produced during the rapid automation of office functions. Education and practice of waste reduction and reuse of materials are modest in the face of the rising tide of waste resulting from Japan's surging affluence. In Tokyo in particular, inadequacies in waste management may curb economic development even more than is threatened in Toronto. Of special interest to Canadians may be the consultation processes and incentives used in the location of waste management facilities, particularly incinerators.

- *Regional planning in Japan is bold, visionary, and comprehensive.* However, planners seem uncomfortable with the prospect of demographic change other than the ageing of the population, which is being anticipated with vigour. In particular, regional planning seems uninfluenced by the changing position of women in Japanese society, most notably their greater participation in the work force. The resulting greater variety in patterns of commuting and need for support services are being insufficiently accommodated. Nevertheless, there is much for Canadians to learn from Japan about regional planning and transportation, especially about the astonishing excellence of the public transportation systems, about the integration of land-use planning with other kinds of planning, and about coordination among various interests and governments.

- *Of the features of local government in Japan that Canadians might learn most from, the preoccupation with training must rank near the top.* The contribution of an emphasis on in-service training to the competitiveness of Japanese business has been well publicized. Less well known is the similar regard for training within the public service and the likely contribution of training to the excellence of local government in Japan. Notwithstanding a cultural disposition to reticence in such matters, managers in Japanese municipalities seem more confident about their roles

and about the value of their work to the community than their counterparts in Canada. Local government is stronger and more effective as a result. Generous provision for training seems the key to this greater confidence and effectiveness.

Other matters were studied incidentally, including the management of construction sites, provision for handicapped persons, and attitudes to the environment. Specific items of business were conducted concerning a conference on waterfront development in Osaka and the the bringing of a trade fair on public design to Toronto. All these various matters except the last are described in the report.

At the end of the report are two appendices: one lists the contacts made in Japan, the other contains the text of the presentation made to the conference in Osaka.

2. PURPOSES OF THE VISIT

I visited Nagoya, Tokyo, and Osaka for the Canadian Urban Institute with aims that included the following:

- To learn more about municipal government in Japan's largest conurbations, particularly about waste management and regional planning in Nagoya and Tokyo.

- To visit the Local Autonomy College in Tokyo, the national government's training centre for senior municipal managers.

- To make contacts that might be useful to the Institute as sources of information and in possible cooperative ventures involving training. (Key contacts made are listed in Appendix A.)

- To learn first-hand about the work of the United Nations Centre for Regional Development in Nagoya, a training and research centre for developing countries in local and regional development, planning, and related fields.

- To present a paper at the International Conference on Aquapolises, Osaka, July 25-27, entitled *Changes in Toronto's Waterfront: 1790-2040,* attached as Appendix B.

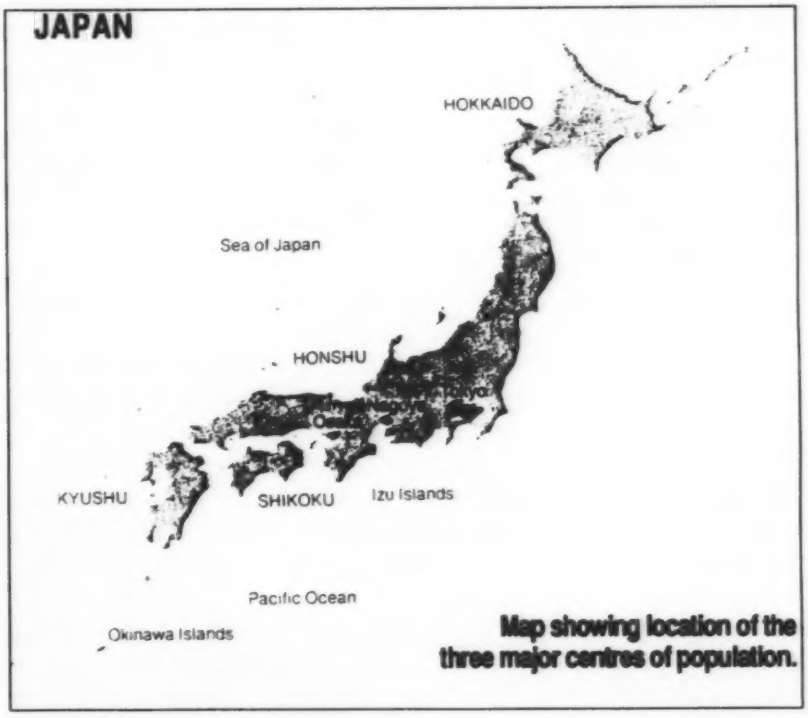
The next three sections provide some general comments about Japan, its municipal governments, and some information about two of the three

urban regions I visited. Then several sections report on the matters listed above. The closing section sets out some additional observations.

3. SALIENT FEATURES OF JAPAN

3.1 The extraordinary density of population

The 3,000 islands of Japan have a total land area of some 375,000 square kilometres (sq km) – about 50% more than the land area of the British Isles but less than 4% of Canada's 10 million sq km.[1] Much of Japan is mountains, some permanently snowbound. No more than 100,000 sq km is available for occupation or cultivation, compared with more than 300,000 of the British Isles and more than 2,500,000 sq km of Canada.[2]



Map showing location of the three major centres of population.

The confinement of almost all of the farms, factories, other businesses, public institutions, recreation centres, and homes of 123 million people to valleys and coastal plains having a total area smaller than that of Nova Scotia

and New Brunswick combined (population 1.6 million) or southern Ontario (population 7 million) is the essential feature of Japan. Japan's usable land is more intensively occupied than almost any other place on earth – much more so, for example, than the Netherlands, which has 15 million people in some 40,000 sq km of land, almost all of which is usable.[3]

This intensity of settlement, which has continued for centuries, has produced an emphasis on harmonious ways of settlement that underlies the excellence of local government in Japan and the importance attached to it.

3.2 The remarkable people and their separateness

A second remarkable feature of Japan is its population, which is more homogeneous, healthier, and better educated than that of any other country.

Japan is homogeneous in two ways, culturally and materially. Over 99% of the population is of Japanese origin,[4] sharing the same language and deeply entrenched culture. The differences in wealth among Japanese are smaller than in most other developed countries – due to relatively low executive remuneration and vicious inheritance taxes.[5]

That Japanese are healthier is indicated by their greater life expectancy than that of residents of any other country: the life expectancy of males is 76 years at birth, that of females is 81 years.[6] The birth rate is among the lowest in the world.[7] Together these features are producing a relatively aged population, incipient population decline, and strong threats of labour shortages.[8]

Literacy is essentially 100% in Japan.[9] Moreover, almost all Japanese receive 12 years or more of intensive schooling – a higher proportion than that of almost any other country.

The large differences in culture and world view between Japanese people and those reared in Europe or North America are magnified further by these conspicuous features of the society:

- Japanese seem to believe they are different from other people and often act that way. For example, the widely held view that only Japanese people are capable of speaking the Japanese language leads to frequent incomprehension when a foreigner brought up in Japan and fluent in the language speaks Japanese. Japanese goods are separated from other goods in department stores. Restaurants rarely serve both Japanese and non-Japanese dishes.[10]

- The Japanese language is utterly different from European languages not only in vocabulary and syntax but also in use. Language is used to denote relative status and to describe sensations to a fine degree, but little else is conveyed with precision. There are three different orthographies for writing the language; they are often all used in the same sentence – sometimes with sprinklings of Roman script. Much of a schoolchild's work is mastering the complexities of spoken and written Japanese.

- Unlike other very different societies, Japan is industrialized and thoroughly North American in material ways. Indeed, its people are rapidly becoming more affluent than North Americans. The sameness in material things serves to exaggerate the other differences.

However different Japan might be, it is not closed or inaccessible. The propensity of Japanese municipal officials to collect and publish data, and the practice of producing many significant documents in English or in Japanese and English, together make research into Japanese municipal government a surprisingly easy matter.

3.3 The long urban history.

Tokyo's eminence as one of the world's largest cities is well known. Some 30 million people live in the Tokyo region, more than in the whole of Canada.[11] Less well known is Tokyo's long history as the largest or near-largest metropolis in the world. Throughout the 17th and 18th centuries, (then known as Edo) it was the largest city in the world – the first to have one million inhabitants.[12] Since the mid-19th century, it has most often been the second or third largest, after London at first, then New York City, and now Mexico City and Saõ Paulo.[13] Also less well known are Japan's other large conurbations – the 23 million people centred on Osaka[14] and the 9 million centred on Nagoya.[15]

4. LOCAL GOVERNMENT IN JAPAN

Japan is divided into 47 prefectures, which are regional governments subordinate to the national government. Governments of prefectures are considered to be local government, together with the governments of the more than 3,250 municipalities (cities, towns, and villages) within them. Municipalities are not generally subordinate to prefectures – their relationships are most often characterized by cooperation, and by sharing when responsibilities are similar. However, prefectures may intervene when municipal actions have regional implications. There are no governments in Japan that correspond to Canada's autonomous provincial governments.[16]

Cities are municipalities with a population of more than 50,000 and more than 60% of the population within the main urbanized area. Nine of the 651 cities have a population of 500,000 or more and are known as designated cities. They have regional responsibilities normally given to prefectures.

The arrangements for Tokyo are different. Tokyo prefecture, population 12 million,[17] is the central part of the Tokyo region (population more than 30 million), which sprawls across four prefectures. (The Tokyo prefectural government is usually known as the Tokyo Metropolitan Government or TMG.) The most densely populated, easterly part of Tokyo prefecture, next to Tokyo Bay, population 8.4 million,[18] is divided into 23 wards, each with its own elected mayor and assembly. This part of Tokyo is known as the *ward area*, referred to often in this report. Each ward is large enough to be a city, most to be designated cities, but the national government has given many of the responsibilities that would normally accrue to these ward governments, and concomitant taxing powers, to the TMG in order to ensure coordination and uniformity of service.

The present structure of local government was introduced in the late 1940s. It is based on that of the United States and thus comprises a separate legislative branch – an elected assembly – and an executive branch headed by an elected governor (for a prefecture) or mayor. Relations between the branches are generally cordial and cooperative, in accordance with the Japanese practice of seeking resolution of problems by agreement, but there is nevertheless an elaborate system of formal checks and balances. In their more extreme form they include the power of veto by governors and mayors over decisions of their assemblies – but only on the first occasion the decisions are made – and the power of assemblies to curb the mayor or governor by expressing no confidence in the official, whereupon the governor or mayor must leave office or dissolve the assembly – and leave office if the new assembly also expresses no confidence.

Overall, government spends less per person in Japan than in Canada, but whereas in Canada most tax revenue is spent centrally, in Japan most is spent locally. Indeed, local governments in Japan spend more than twice as much per person as their equivalents in Canada. To do this they can use a vast array of taxes – including taxes on inhabitants, enterprises, real estate and other fixed assets, tobacco products, amusements, meals and hotels, automobile acquisition and operation, fuel of all kinds, water, timber delivery, and land development – but revenue from such taxes provides only about half of the total income of local government. Grants and legislated shares of national taxes provide the remainder.[19]

Local government in Japan is powerful and confident. The annual expenditure of the Tokyo Metropolitan Government on directly delivered

services is close to $45 billion[21] – and this sum does not include the billions of dollars spent by the municipalities within the prefecture. The annual expenditure of the City of Nagoya is $6.6 billion.[22] Municipalities in Metropolitan Toronto – which has a population similar to that of the City of Nagoya – spends in total about half as much. The success of the Japanese economy depends in important ways on the strength of Japan's local government.

5. OVERVIEW OF NAGOYA AND TOKYO

The following table provides data about Nagoya and Tokyo, and some comparisons with Metropolitan Toronto. The data are estimates for 1990.

	Nagoya	Tokyo	Metropolitan Toronto
Status of community	Designated city	Prefecture	
Located in (prefecture)	Aichi		
Adjacent prefectures straddled by urban region	Gifu, Mie	Chiba, Kanagawa, Saitama	
Population of region[23]	9,000,000	32,000,000	4,000,000
Population of community[24]	2,150,000	12,000,000	2,280,000
Households[25]	727,000	4,710,000	874,000
Persons per household	2.95	2.55	2.61
Home ownership[26]	45%	40%	51%
Area (sq km)[27]	327	2,162	630
Persons per sq km	6,555	5,550	3,619
Daytime population[28]	2,440,000	14,300,000	2,510,000
Household income[29]	$66,000	?	$58,000

The ward area of Tokyo (see Section 4) is sometimes known as the City of Tokyo, which it was until 1943.[30] There is now no such entity. Some estimated 1990 statistics for the ward area are: population – 8.40 million; households – 3.43 million; persons per household – 2.45; area – 598 sq km; persons per sq km – 14,047; daytime population – 11.15 million.[31]

6. WASTE MANAGEMENT IN NAGOYA AND TOKYO

6.1 North American views of waste management in Japan

Japan has often been used as a model of waste management. For example, David Suzuki, in his influential radio program *It's a Matter of Survival*, said "Japan recycles 50% of its waste." A letter to the *Toronto Star* last December claimed "Japan recycles 50% of its garbage, and Canada 4%." The weekly newspaper *Now*, in giving recycling data in August, 1990, stated: "Percentage of Metro Toronto's solid waste recycled or reused in 1990: 10" and "Percentage of Japan's solid waste that is recycled or reused: 50." An article in the *Chicago Tribune* in May, 1989 reported that Japan recycles up to 75% of its municipal solid wastes.[32]

As I'll demonstrate below, the truth is nearer to what was stated in a report in the *Washington Post* in November, 1988: "Japan's environmental protection agency indicates that Japan's overall recycling rate is closer to 6 percent by volume. Though these recycling estimates vary, what is clear is that the majority of the rest of Japan's waste is processed in waste-to-energy facilities."

The discrepancies between some of these statements and reality may have arisen from a mistranslation of 'incineration' or 'diversion from landfill' as 'recycling'.

Municipalities are generally responsible for the disposal of non-industrial waste in Japan. (Tokyo is an exception. In the ward area, the prefecture is responsible.) Industrial waste is defined by type rather than by source. There are 19 categories of industrial waste, including cinders, sludge, oil, acids, and plastics,[33] some of which are considered hazardous in Canada and some of which are not. Disposal of industrial waste is the responsibility of the producer. Prefectures and municipalities regulate the management of industrial waste and assist by disposing of some of it.

Household waste and small quantities of non-industrial commercial waste are collected by the local authority and taken to public disposal facilities.

Non-industrial commercial waste in larger quantities is taken to the public facilities by the generators themselves or by private contractors.[34]

6.2 Waste handled by local government in Nagoya and Tokyo

Features of waste management by the City of Nagoya and the Tokyo Metropolitan Government (for the ward area only) are set out in the following table:

	Nagoya (1989)[35]		Tokyo (1988)[36]	
	Amount (tonnes x 10^3)	% of total	Amount (tonnes x 10^3)	% of total
Collected by local authority	724		3,496	
Delivered privately	236		1,835	
Amount treated by local authority	960	100	5,331	100
Amount incinerated	734		2,802	
less: Ash to landfill	131		424	
Disposed of via incineration	603	63	2,378	45
Other (than ash) to landfill	213		2,486	
Disposed of via landfill	345	36	2,910	55
Recycled, composted, etc.	12	1	43	1

A higher proportion may be landfilled in Tokyo partly because the TMG is more lenient about accepting industrial wastes at the landfill sites than the Nagoya officials (in order to allow businesses to continue to operate) and partly because some sewage sludge goes directly to landfill (rather than being incinerated by the private sewage system operator or dumped in the sea, far away from shore).[37]

Some of local government's waste management costs are set out in the following table:

	Nagoya (1986)[38]	Tokyo (1988)[39]	Toronto (1989)[40]
Collection and transportation	133	252	106
Incineration	75	79	n.a.
Landfill	53	26	13

Costs are in Canadian dollars per tonne of waste handled.

Other costs are not represented in the table, including the costs of compaction and sorting. About 6% of the cost of incineration in Tokyo is recovered from the commercial sale of electricity and heat.[41] (Most of the recovered energy is used for the plant and associated neighbourhood facilities – see Section 6.6)

6.3 Composition of wastes handled by the public sector

In both Nagoya and Tokyo (and elsewhere in Japan), material for collection must be separated into combustible and incombustible waste. Combustibles are collected twice a week in Nagoya, three times in Tokyo. The collection of combustibles is door-to-door in Nagoya and from designated collection points in Tokyo. Incombustibles are collected once a week in both cities – from designated collection points.[42]

In both cities, annual surveys of waste composition are conducted. The most recent data are given in the table on the next page. Each number in the table is a percentage of all wastes collected as combustibles and incombustibles by the respective local authority:[43]

The table shows that the major difference between the cities in respect of composition of wastes is the much higher proportion of paper in Tokyo compared with Nagoya (37% vs. 25%), which is likely a consequence of the greater amount of office activity in Tokyo. In both cities, plastics are not considered suitable for incineration, and yet the surveys suggest more plastics are incinerated than sent to landfill.

	Nagoya	Tokyo
Collected as combustibles and considered suitable for incineration:	**68**	**66**
Including: Paper	*24*	*34*
Kitchen waste	*32*	*22*
Other	*12*	*10*
Collected as combustibles and not considered suitable for incineration:	**14**	**8**
Including: Plastics	*10*	*6*
Other	*4*	*2*
Collected as incombustibles:	**18**	**25**
Including: Glass	*7*	*8*
Metals	*4*	*5*
Plastics	*3*	*5*
Paper	*1*	*3*
Other	*3*	*4*
Total	**100**	**100**

6.4 Handling of industrial wastes.

Local governments have a regulatory role with respect to industrial wastes, but are not responsible for collecting or disposing of them. Small amounts of certain industrial wastes from small businesses are allowed in public disposal facilities, especially in Tokyo, but generators must generally use private disposal facilities. Similar arrangements apply to sewage, much of which is collected from properties twice a month and taken to public or private treatment facilities. Statements in this section are less reliable than those in the previous sections because data on private disposal of solid wastes and sewage sludge are not comprehensive and are difficult to compare.

In Nagoya, industrial wastes amount to some 2,500,000 tonnes a year, or about 70% of all wastes.[44] In Tokyo, the total is about 8,000,000 tonnes a year – about 60% of all wastes.[45] (The higher proportion of industrial wastes in Nagoya reflects the relatively larger industrial base of that community.)

Combining the information in the previous paragraph with that in Section 6.2 allows estimates to be made of the total public and private solid waste produced each year. In the Tokyo ward area this amounts to some 1.6 tonnes per person per year. It is rising at an annual rate of about 5%.[46] In Nagoya, the total is some 1.7 tonnes per person per year, rising at an annual rate of about 6%.[47] By contrast, the comparable waste production in Metropolitan Toronto is 1.1 tonnes per person per year[48] – presently more-or-less constant from year to year.[49]

The comparisons with Toronto in the previous paragraph may not be reasonable on account of what is considered waste in the two countries. Particularly difficult to unravel are the extents to which demolition debris, sewage sludge, and office paper feature in listed amounts of industrial waste.[50] Effective private programs for recycling substantial amounts of used office paper appear to be in place,[51] but officials in both Nagoya and Tokyo suggested that rapid office automation with its resulting avalanche of paper is a major contributor to the growth of waste that must be handled.

6.5 Landfill arrangements

Nagoya operates two landfill sites, one just outside the city limit, one more than 40 kilometres away.[52] Both will be full in 1992.[53] The planned replacement is a dyked portion of the tidal flats at Nariyo, west of Nagoya in the Ise Bay. This site has already been approved by the national government but is being delayed by environmental groups, chiefly a birdwatchers' organization concerned about destruction of one of Japan's few tidal flats. The new fill area will now not be ready before 1994.[54] Business waste goes to a landfill site in another prefecture.[55]

A national law that applies only to Tokyo requires the TMG to manage all of the wastes from the ward area within the boundaries of the ward area. (The City of Nagoya is not constrained in this way, nor are the producers of business wastes within the ward area of Tokyo prefecture.[56]) There is no land available in the ward area for a landfill site and so all incinerator ash and incombustible waste is dumped in dyked areas of Tokyo Bay – a practice that has been going on for three hundred years.[57]

One of the dyked areas, by Haneda airport, is essentially full. It has been used only for incinerator residue as the proximity of other waste to the airport could be hazardous. Also, further elevation would limit use of the runways.[58] The other area, known as the Outside Central Breakwater Landfill Site, will be full in 1992 or 1993. As recently as a year ago, officials expected this site would last until 1996, but such is the growth in the creation of waste

and the relative ineffectiveness of waste reduction and recycling programs, the anticipated exhaustion date has been brought forward dramatically.[59]

Officials estimate that during the past few years these measures have reduced the amount of waste handled by the TMG by 10% from what it would have been without the measures, but not enough to prevent annual increases.[60] A waste reduction campaign entitled Tokyo Slim '89 – aimed at "refleshing the very corpulent town Tokyo" – received funds of $4.25 million last year.[61]

Just now, the focus is on making the most of existing dyked areas by doing three things: (i) draining water from the clay base to increase the capacity of the containment areas; (ii) compressing the garbage already deposited; and (iii) raising the height by the greatest amount that is safe.

Consideration is being given to the creation of further dyked areas of Tokyo Bay for receiving waste. But the remaining areas of the Bay that are within the boundary of the ward either straddle shipping lanes to the port or would be costly to prepare on account of the depth of water.[62]

Nevertheless, more dyking is likely. Land near downtown Tokyo may be the most valuable in the world. (In 1989, commercially zoned land sold for an average of $120,000 a square metre, residential was $50,000[63] – this amounts to $11,100 and $4,600 a square foot, respectively. Downtown Toronto land is worth no more than $1,000 a square foot.[64]) Since 1961, Tokyo has reclaimed some 2,370 hectares of the Bay for port expansion and urban development, much of it using waste as fill. The new land is used for a housing complex, parks, markets, a waste incinerator, a sewage treatment plant, a heating plant, a bullet-train terminal, and a subway train garage.[65] Tokyo's most ambitious public project, Tokyo Teleport – to have a working population of 110,000 and a residential population of 60,000 – will be built on such reclaimed land.[66]

The problem that plagues old landfill sites in Canada – escaping methane – is less of a problem in Japan because most waste vegetable matter is incinerated. Generally, only ash and other inert material is landfilled. Nevertheless, care is taken to capture and use gases that are produced. Construction on such former landfill sites can be safe within a decade.[67]

Time is rapidly running out for the disposal of wastes handled by the TMG, but the crisis is truly imminent for privately handled wastes in the Tokyo region. According to a recent report by the national government, capacity for the landfilling of industrial and other business wastes will be exhausted in six months.[68]

Well publicized plans are being developed to limit packaging (which in Japan often seems as important as the product) and to require use of recycled

materials during manufacture, and there is a general understanding that more has to be done to limit waste. But the urgency of Tokyo's waste management predicament does not seem to have reached the consciousness of either the public or the powerful.

6.6 Incinerators

As noted in Section 6.2, about 63% of the waste handled by the City of Nagoya is incinerated, as is about 45% of the waste handled by the Tokyo Metropolitan Government.

Nagoya has five incinerators, three completed in the 1970s, one in 1985, and one in 1989. The older units are of Japanese manufacture; the later units are European.[69] All have electrostatic precipitators and wet or dry scrubbers. A planned unit – a joint venture with Vølund of Denmark (like the most recently completed) – will have a baghouse, thus allowing for state-of-the-art emission control.[70] The new unit will burn 500 tonnes a day. It will cost about $110 million, of which about $7.5 million is for the neighbourhood swimming pool and community centre that is a component of all incinerator complexes.

I visited the Tomida plant, completed in 1989. Notable features of the plant are:

- the close proximity to residential properties
- the extraordinary cleanliness of the plant, inside and out
- the remarkable degree of automation; for example, there were no crane operators – cranes mixing the waste and loading it into the hoppers were controlled by the system computer
- the display of litter bins of the world (including a Toronto example) that graced the public and private areas of the facility – a legacy of the design exhibition in Nagoya in 1989.

The Tokyo Metropolitan Government operates 13 incinerators in the ward area. The completion dates range from 1960 to 1983. Nine of the 13 are of European design.[71] None seems to have the latest emission control equipment, although the two most recently constructed facilities appear to meet the latest Swedish standards in all respects except emissions of dioxins. Earlier facilities also allow more mercury and hydrogen chloride into the air than present Swedish standards permit.[72] The standards that prevail at each Tokyo incinerator are what have been negotiated with neighbours, in addition to those required by local and national governments.

Many years of negotiations with neighbours precede construction of an incinerator – 20 years in the case of the one completed in 1978.[73] The plan seems to be to have an incinerator in almost every one of the 23 wards, thereby reducing dependence on landfill, but I heard no mention of plans for particular facilities.[74]

Very little of the energy released in the burning of refuse in Japan is now sold. Most of it is used for internal purposes within the incinerator complex, including the usual community centre and pool, or wasted. The Tokyo Metropolitan Government plans to link the 13 incinerators with steam pipes and establish a massive district heating system that will serve more than 500,000 homes and several hundred businesses.[75] Revenue from sales of waste heat will rise from the present level of approximately $12 million[76] to more than $350 million by 1994, when the new system is planned to be in full operation.

A feature of incineration plants in Japan is the small amount of ash that is generated. Typically, this appears to be in the order of 12% to 14% of the waste burnt by weight[77] – much less by volume. In North American and European plants the ash produced is a much higher proportion of the waste burnt – 30% by weight is a typical figure.[78] Two factors might contribute to this discrepancy. Waste sent to Japanese incinerators has already been sorted into combustible and incombustible fractions, thus keeping glass and metals out of the ash (the most likely explanation). Also, Japanese incinerators may be operated in a more efficient manner that leads to more complete combustion of the waste and less ash as a consequence.

6.7 Reduction, reuse, and recycling

The foregoing sections provide much to suggest that Tokyo and Nagoya, at least, are not models of good waste management practice. The recent high rate of increase of waste production in the two cities has played havoc with plans to replace rapidly depleting disposal capacity. Municipal recycling is negligible. Education towards waste reduction and reuse is modest in relation to the growing magnitude of the problem. Most resources are devoted to making better use of existing disposal facilities and planning new ones.

The small scale of recycling activities in Nagoya is illustrated by a municipal program, just introduced, to provide what amounts to a 0.8¢ credit towards a book purchase for each aluminum can taken to a local office. In Tokyo, recycling appears to be mostly a matter for community groups and the private sector. According to a 1989 report:

> "Among residents there are two main modes of recycling of wastes. In one form, individual recycling businesses tour neighbourhoods in their trucks and recover old newspapers and magazines and rags from households in exchange for new toilet paper or tissue paper. The other form is voluntary group effort by community residents, in which each household keeps materials that can be recycled and carries these items to a designated place on a designated day, to be sold to a recycling business."

The total amount of waste diverted by such programs amounts to less than 2% of the total waste stream, although more than the Tokyo Metropolitan Government recycles itself in the course of intermediate processing of collected wastes.[79]

Composting in Tokyo occurs in one small plant only, handling 50 tonnes of combustible waste a day. It produced 314 tonnes of compost in 1988.[80] No more can be sold within the area of economical transportation. Home composting was tried in Nagoya a few years ago but was given up on account of complaints about smell.[81] A recent report issued by the national-government-sponsored Environmental Information Centre recommended that citizens bury raw garbage in their gardens.[82]

Informal reports and comments by officials suggest that substantial amounts of office paper are recycled. But the high proportion of paper in municipal waste, especially in Tokyo (see Section 6.3), and statements by officials that office paper contributes a major part of the growing burden of waste, together indicate that much office paper is not recycled.

Solid waste management seems to be the Achilles heel of the Japanese economy – or at least the economies of Nagoya and, in particular, Tokyo. (These two regions have about 30% of Japan's population and comprise 40% of its economy.) Attention is just turning to the waste problem in a major way. Japanese determination and resourcefulness have overcome other seemingly intractable problems, and thus there is reason to suppose that the growing discrepancies between waste generation and waste disposal capacity will be resolved, either by reducing waste production in imaginative ways or by developing new methods of handling waste.

In the meantime, however, Japan should not be regarded as a model of waste management. This will be the central point made in a presentation on waste management in Japan I shall be making to the Metropolitan Council's Works Committee on September 19.

7. REGIONAL PLANNING IN NAGOYA AND TOKYO

7.1 General observations

Land use planning in Japan is a more integral part of overall planning than in North America. The document *Planning for Nagoya 1989* has these chapter headings: Nagoya [physical and demographic features]; City Planning History; City Planning; Land-use Planning; Transportation; "Greenification"; Waterworks and Sewerage System; Distribution [markets, etc.]; Refuse Disposal; Housing; Urban Development and Improvement; Regulations for Planned City Building; "Townscape"; Urban Disaster Prevention; Port; Extensive Planning [national and regional context of planning]; and Future Planning. The document *Planning of Tokyo 1990* is equally comprehensive. Both documents are bilingual – Japanese and English.

Other features of planning in Japan are its distant horizons – Tokyo's current plan has a 60-year horizon – and its boldness, about which more will be said in the next two sections.

The basic context of urban planning in Japan is the National Integrated Development Plan,[83] targeted at the year 2000 with its fourth phase laid out in 1987. Nagoya's planning document describes the relevant objectives of the National Plan in this way:

> In order to cope with Tokyo's unipolar concentration, and deal with an ageing society and socioeconomic changes due to internationalization, etc., the fourth phase of the Plan's basic aspects are regional activation through settlement and interchange, internationalization and re-forming of international city functions, and improvement of high quality national living environments. This includes not only the basic goal of a safe and comfortable nation but also the creation of a multipolar dispersion of functions across the nation in which regional areas and centralized areas mutually stimulate and communicate with each other.
>
> With Nagoya City as a base, it is planned to develop the cities within the Gifu, Yokkaichi, and Toyota City radius into an international industry and technology centre. Also planned is the accumulation of world-class research and development techniques in leading industrial fields such as aerospace and fine ceramics, and to increase information capabilities, and to concentrate international exchange capabilities.[84]

The national plan sets the framework for various regional plans. For planning purposes, Nagoya is within the Chubu region, which comprises nine prefectures – a much larger area than the urban region centred on Nagoya. The urban region is given a role in the Chubu Plan, which is further articulated in the plans of the three prefectures that are straddled by the urban region (Mie, Gifu, and Aichi – which includes Nagoya). Nagoya's plan is thus

consistent with those of Aichi prefecture and Chubu region, and with that of the national government.

That the plans are not entirely effective is seen from a comment in the Tokyo planning document:

> The tendency of population concentration in the Tokyo Metropolitan Region has been a constant phenomenon since the end of World War II, in clear distinction with the Osaka Metropolitan Region, where the population is in a slight decline, and the Nagoya Metropolitan Region, where the population has levelled off. This implies a comparative enhancement of the status of the Tokyo Metropolitan Region.[85]

The concentration of population and economic activity in Tokyo might have been greater without the planning superstructure.

There is evident competition among and tension between these major conurbations. (More than half of the participants in the conference in Osaka I attended were from Japan, but no representatives of Nagoya or Tokyo were present.) Nevertheless, the Japanese willingness to talk things out produces what appear to be coherent national, regional, and local planning objectives.[86]

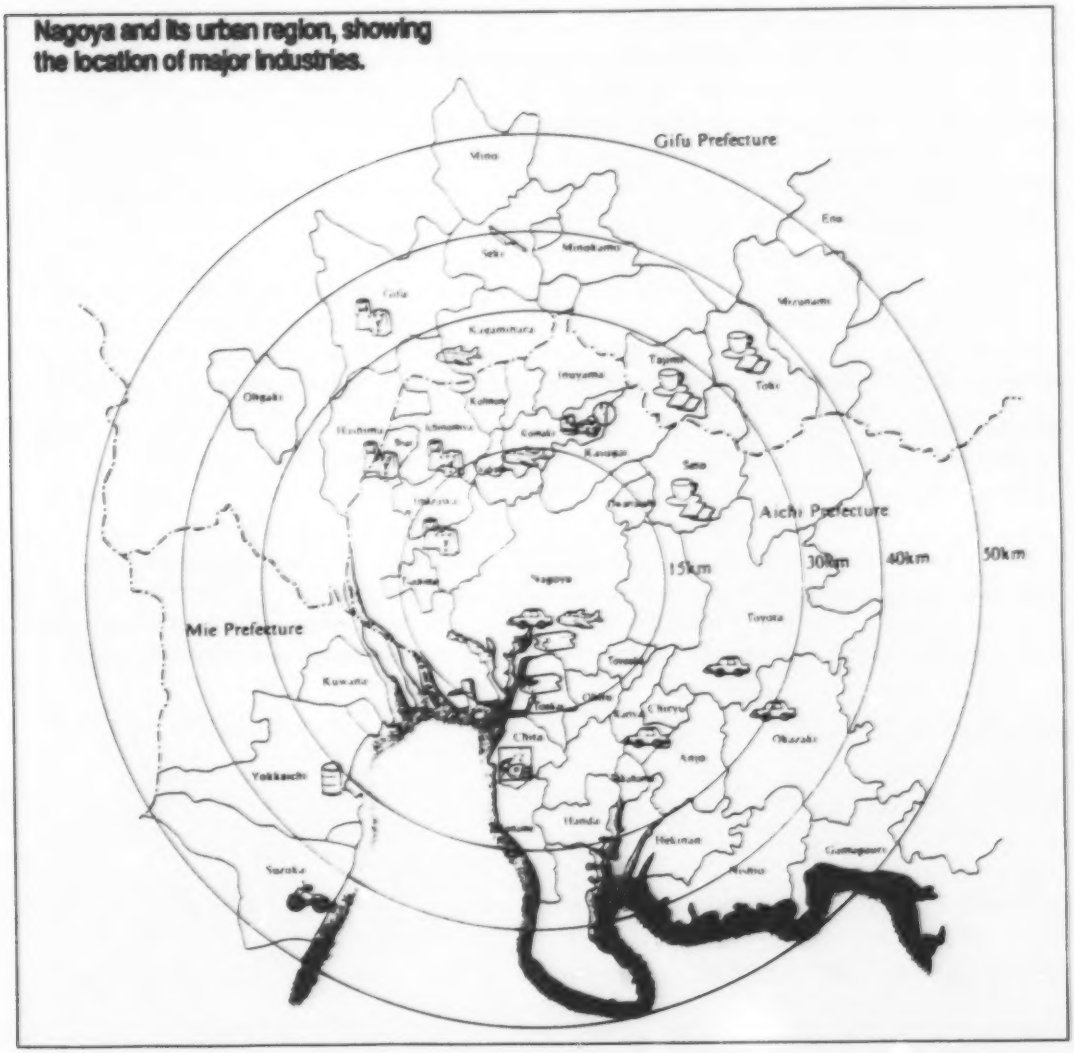
Both Nagoya and Tokyo have experienced substantial suburbanization, shown in the following comparison with the Toronto region, where suburban development is believed to have been remarkable:

	Population in millions		
	1965	1985	Change
Nagoya:			
City of Nagoya	1.94	2.12	+9.3%
Suburban area	4.16	6.02	+44.7%
Nagoya Metropolitan Region[87]	6.10	8.14	+33.4%
Tokyo:			
Tokyo – ward area	8.89	8.35	-6.1%
Suburban area	12.11	21.92	+81.0%
Tokyo Metropolitan Region[88]	21.00	30.27	+44.1%
Toronto:*			
Toronto, York, and East York	0.88	0.84	-5.1%
Suburban area	1.65	2.89	+75.2%
Greater Toronto Area[89]	2.53	3.73	+47.4%

*Toronto region data are for 1966 and 1986

7.2 The Nagoya Region

Nagoya's suburbanization has consisted primarily of growth of smaller cities in Nagoya's hinterland, each mostly around a particular manufacturing sector. Best known is Toyota City but the automotive industry is also predominant in Kariya, Okazaki, and Suzuka. Textile manufacturing prevails in Gifu and Ichinomiya, the chemical industry in Yokkaichi, pottery making in Seto and Tajimi, and aircraft manufacturing in Komaki and Kagamihara. Much of this industry (e.g., Toyota) moved out of Nagoya City in the post-war period.[90]



Nagoya and its urban region, showing the location of major industries.

Until recently, the refocusing of jobs and people seems to have been neither promoted nor resisted by planners. It was just accepted, and the necessary infrastructure was provided. Now, there is the beginning of a concern to stem the rate of suburbanization, chiefly on account of the stagnation in the City's population, which has hardly changed since 1970, and traffic congestion mostly at and near the City limit.

The concern has led to a move to increase the population of the City of Nagoya from 2.15 to 2.40 million by the year 2000[91] – almost three times the rate of increase during the previous 25 years. This will be achieved by the construction of high-rise public housing, both to intensify the use of land and to achieve units that are affordable – an aim that will be difficult to meet on account of the strong legal protection afforded neighbours against overshadowing.[92] Currently, said city planners, a typical young family can afford to buy property that costs from $250,000 to $330,000 – but even a small apartment in Nagoya City now costs $400,000.

Unlike Osaka and Tokyo, Nagoya's modal split is in favour of the private automobile, as is shown in the following table:[93]

Percentage of all journeys by:	City of Nagoya	City of Osaka	Ward area of Tokyo	Metro Toronto
local train	16	45	51	<1
subway	11	19	22	10
bus, streetcar	9	4	7	18
taxi, etc.	4	5	6	1
private automobile	60	27	15	70

The table shows that in the ward area of Tokyo, excluding walking and bicycling, 85% of all journeys are made by public transit. The proportion for the City of Osaka is 73%; but for Nagoya it is only 40%. The high rate of use of automobiles in Nagoya is attributed to the wide streets (which was how the City was rebuilt after the devastation of World War II)[94] and the high rate of automobile ownership (attributable to the general prosperity and the local concentration of automobile production). The distinctive feature of all of these Japanese communities, compared with Metropolitan Toronto, is high rate of use of local trains travelling on surface routes.

The plan is to change Nagoya's modal split to 50%-50% by the year 2025 by providing better public transit rather than by restricting automobile use.[95]

Discussions about trains with linear motors and guideway systems for buses feature much in plans for the future of Nagoya's transit.[96]

The Nagoya region seems to be an example of a nodal pattern of distribution of population that works. The main contributing factor to the success seems to be that people live in the nodes where they work. Not many more people enter the City of Nagoya each workday than enter Metropolitan Toronto (460,000 vs. 390,000) even though three times as many people live in the region outside the City of Nagoya as in the Toronto region but outside Metropolitan Toronto.

People are able to live near where they work in the nodal Nagoya region because employers play a strong role in securing necessary accommodation.[97] As women remain longer in the work force and hold more and more senior positions in companies different from their husbands, the likelihood of commuting between nodes will increase and suburban congestion will intensify. Planners in the Nagoya region do not seem to be anticipating these possible changes.

The land-use approval process in Japan is complex and sophisticated. However, the critical decisions regarding urban sprawl are those of the governors of the prefectures in which the land lies. Regional impacts of development appear to be given lower priority in making these decisions than acceptability in terms of the immediate environment.[98]

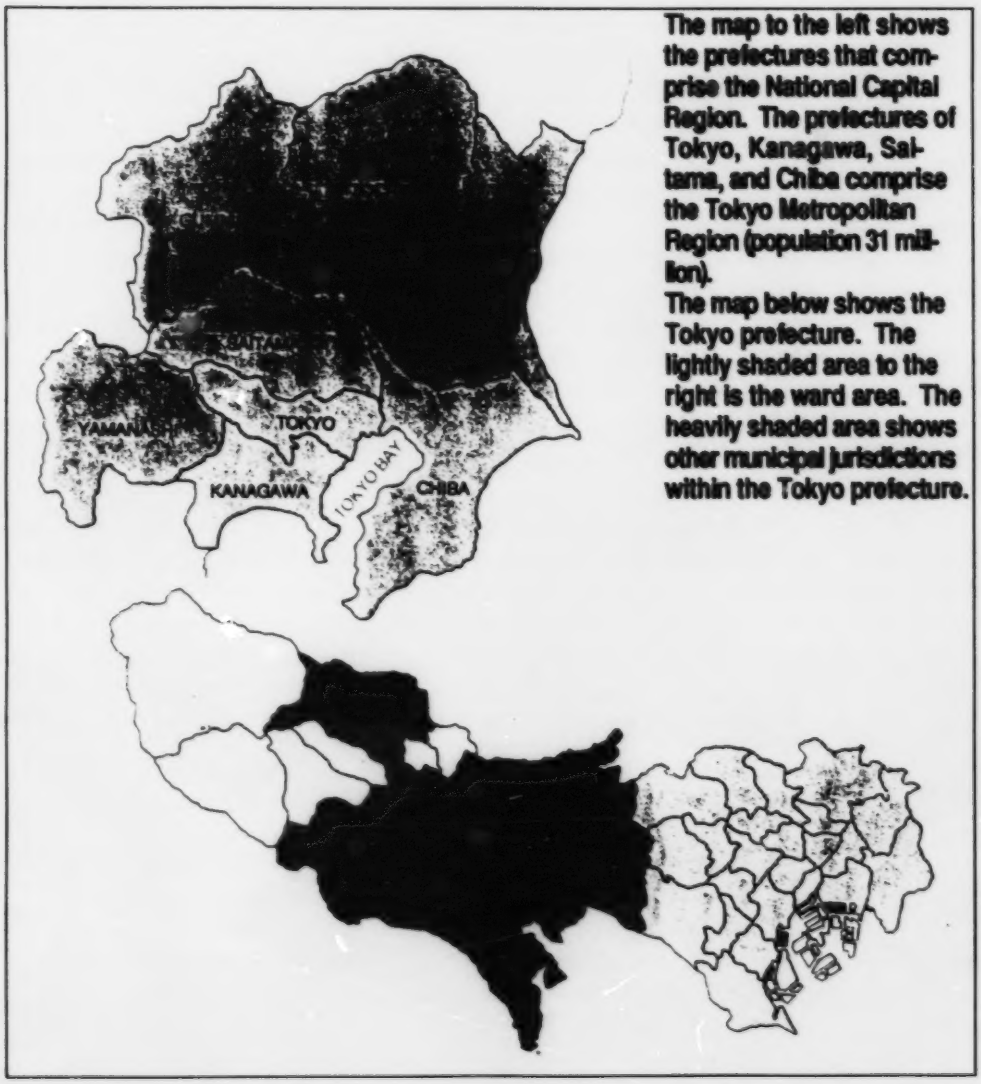
Officials of Nagoya's Planning Bureau believe Nagoya is the leading city in Japan regarding the management of urban development. There are plans to establish a local urban institute to enhance and spread this excellence.[99] A team of eight officials are working on this project. The urban institute is to go into a new building with the United Nations Centre for Regional Development (see Section 9), all paid for by the City of Nagoya.

7.3 The Tokyo Region

The policies of governments responsible for the Tokyo region have been and continue to be directed towards reducing the concentration of activity within the central part of the region (the ward area of Tokyo prefecture – see maps on next page) and establishing what are called in *Planning of Tokyo 1990* "multi-core urban zone complexes."[100] To this end 18 satellite towns have been created.[101]

These policies have undoubtedly contributed to the remarkable degree of suburbanization described in the table in Section 7.1 – the ward area's population declined by some 540,000 (6.1%) between 1965 and 1985, while that of the suburban area increased by almost 10 million (81%).

However, the daytime population of the ward area increased from 10 million in 1965 to almost 11 million in 1985 (9.3%), and is still growing.[102] The number of commuters into the ward area increased from 1.4 million in 1965 to 3.0 million in 1985 (115%, or 3.8% a year).[103] Automobile traffic in the region is increasing at an even higher rate. The number of vehicles on the region's roads almost tripled between 1970 and 1988 – from 300,000 to 850,000 vehicles a day.[104]



The map to the left shows the prefectures that comprise the National Capital Region. The prefectures of Tokyo, Kanagawa, Saitama, and Chiba comprise the Tokyo Metropolitan Region (population 31 million).

The map below shows the Tokyo prefecture. The lightly shaded area to the right is the ward area. The heavily shaded area shows other municipal jurisdictions within the Tokyo prefecture.

Commuting times into and out of Tokyo are legendary. Travel times of 90 minutes each way are regarded as normal. Conditions of crowding are

even worse than those experienced in Toronto but – with more subway lines and improved service –no longer as bad as in the 1950s and 1960s when they were described officially as dangerous.[105] A new trend is to commute by bullet train – from distances of up to 200 kilometres at a cost of more than $1,000 a month.[106] (Residents of the Tokyo region have a remarkable ability to sleep during journeys by subway and train. During one journey away from the centre of Tokyo at about 3.30 p.m. on a weekday, I estimated that two-thirds of the 50 or so passengers in one car were asleep. A private art gallery in Tokyo was displaying a photographic study of such sleepers entitled "Silent on Their Way." I could not find the gallery.)

While the deliberate process of suburbanization may have been successful in accommodating the region's new growth in places away from the core (and perhaps even stimulating some of the growth), the core itself became the world's major centre of office activity. Indeed, the rise of Tokyo as the world's premier centre of financial activity may have been aided by the process of suburbanization, which released space for office construction and goaded salarymen on with suburban dreams and the need to finance them.

On the other hand, Tokyo may have prospered in spite of its size and congestion. What is clear is that the massive megalopolis would grind to a halt completely if it were not for the astonishing scale and efficiency of its public transit. Some 30 million rides a day occur within the ward area.[107] One subway and local train station, Shinjuku, handles over four million passengers a day.[108] (The whole system of the Toronto Transit Commission handles 3.6 million rides a day.[109])

(This excellence in public transportation applies equally to inter-city travel in Japan. There are 93 trains a day each way between Tokyo and Osaka, 553 kilometres apart – a little more than the 540 kilometres between Toronto and Montreal. Most of them are scheduled to do the journey in less than three hours, and they arrive on time.[110])

Shinjuku is a focus of another part of the main planning exercise – to refashion the ward area of Tokyo as a "multi-core international city" by spreading the activities of the central business district (CBD) among seven subcentres, Shinjuku – six kilometres north west of the CBD being one. Central to the development of Shinjuku as a subcentre is the imminent move there from the CBD of the headquarters of the Tokyo Metropolitan Government[111] – into what will be Japan's tallest building (243 metres; Commerce Court, Toronto's third tallest, is 239 metres)[112] and, with its core optical communications network, one of the world's most technologically sophisticated.[113]

Development of six of the ward area subcentres involves expanding the scope of existing activity. The seventh – the Waterfront Subcentre – is to

be wholly new: "a futuristic city, capitalizing on its proximity to the heartland and its waterfront environment, including a knowledge-intensive urban industrial area."[114] At its core is Tokyo Teleport, the centrepiece of Tokyo's 60-year plan, adopted in 1986,[115] to have a working population of 110,000 and a residential population of 60,000 – already mentioned in Section 6.5 in connection with Tokyo's waste disposal arrangements.

Tokyo Teleport gives an idea of the scale of thinking of the Tokyo Metropolitan Government. It is a $33 billion project,[116] already begun, that will likely be the world's main telecommunications centre during the first half of the 21st Century. It is also to be a major source of recreation opportunities for Tokyo's residents, with special attention to the needs created by the ageing of the population.[117]

The TMG's focus on the waterfront complements new plans for the development of centres around Tokyo Bay, a huge inlet from the sea some 75 km long and averaging 20 km wide. These plans are breathtaking in their scale and imaginativeness. They involve creation of several artificial islands, two new ports, an offshore international airport, a tunnel "to funnel clean sea water along Tokyo Bay's Kujukuri Beach," and an underground canal through a peninsula to provide easy shipping access to the Bay. The estimated cost of this package, to be completed by the year 2025, is $170 billion.[118]

A smaller part of the vision for Tokyo is to reverse the decline in the population of the ward area in part by requiring residential with commercial development.[119] The immediate imperative for the movement of people away from the ward area is the extraordinarily high price of land and the low quality of the accommodation. Household incomes and rents are similar in Toronto and in the ward area of Tokyo. The difference is that the unit size in Tokyo is less than half that in Toronto – 40 vs. more than 100 square metres.[120] Other moves to provide affordable accommodation in the ward area include building on TMG-owned land, and securing surplus land from Japan Railways – now a series of private companies but still under tight government control.

As everywhere, transportation is the key to good regional planning. The maps are covered with proposed rail and and other transit lines, but they are also covered with proposed new expressways and other roads.[121] Automobile sales are booming in Japan.[122] Continued accommodation of them in the Tokyo region hardly seems possible, and yet that is what is planned.

Tokyo planners also seem unprepared for changes in the roles of women in the work force and their impacts on movement within a region. I asked, "How will the satellite centre system work if people won't move to

where the jobs are?" The response was that the problem is recognized, and it is hoped it will work itself out as people see the attraction of living where they work. "But," I asked, "what about two-income families?" There was no response.[123]

8. THE UNITED NATIONS CENTRE FOR REGIONAL DEVELOPMENT

This centre was established in Nagoya in 1971 by resolution of the United Nations Assembly to enhance the capabilities of developing countries in regional (i.e., subnational) development and planning. To this end the Centre does the following:

- organizes training courses
- promotes collaborative research on substantive issues in regional development
- extends technical advisory services
- serves as a forum for exchange of experiences
- fosters exchange of documentation and information on local and regional development and planning.[124]

To do these things, the UNCRD has a staff of 73, including 40 professionals. About 50 of the staff are Japanese; there are no Canadians. The centre's core activities are funded entirely by the Japanese government, which pays 115% of these costs (the 15% is retained by UN headquarters for administration). The City of Nagoya also provides support, chiefly in the form of secondments and subsidized accommodation. The latter has a current value of $330,000 per year.[125]

The centrepiece of the UNCRD's training activities is an annual two-month course in regional development planning, held in April and May each year since 1973. The course, given in English, is primarily for government officials employed by agencies responsible for local and regional development and planning. It has the following syllabus elements:

1. Meaning of development: central problems and issues.
2. Theories, concepts, and approaches.
3. The regional planning process.
4. Economic, social, and demographic analysis.
5. Planning for strategic sectors (agriculture, industry, infrastructure, and transport).

6. Land-use planning (including urban land-use planning).
7. Environmental planning.
8. Regional social planning.
9. Local level planning (including community participation).
10. Regional plan and budget interfacing, and coordination.
11. Project planning, management, and evaluation.
12. Lessons of experience (including Japanese and other case studies).

Each year, 22 fellowships are offered to participants in the course from developing countries; the amounts cover air fare and all other expenses. Participants from other countries are also accepted – at a cost this year of about $7,200 each, which includes everything except air fare.

One of the projects of the UNCRD is the "International comparative research project on urban development policies in the context of progressing globalization." Its objectives include:

- Detailing information about the major cities of the world, including information about their urban development policies and projects.

- Understanding urban development policies and projects in the context of progressing globalization.

- Establishing a human and institutional network for the exchange of information and experience.

- Holding, at the end of the three-year term of the project, an international seminar on urban development policies.

Thirty urban regions have been selected for detailed examination during the course of the project, including two in North America: Los Angeles and Toronto. Support for the work on these two and the other First World cities to be examined is to come from the portion of UNCRD's work funded by the City of Nagoya – not from the regular budget of the Centre. Mr. Kiyotaka Hayashi of the UNCRD (and the City of Nagoya) will be in Toronto from November 7 to 10 to begin work on the Toronto portion of the project.[126]

9. THE NATIONAL MUNICIPAL TRAINING INSTITUTE

This institute is known as the Local Autonomy College, a name that has its origin in the Japanese constitution, adopted in 1947. Article 92 of the constitution specifies that "the organization and operations of local public entities shall be fixed by law in accordance with the principle of local

autonomy [which means that] local government ... should be given status and powers independent of central government, and be allowed to administer such specified areas with a minimum of intervention from central government."[127]

The Local Autonomy College was established by an act of the Japanese parliament in 1953 under the aegis of the Ministry of Home Affairs. All of its expenses continue to be paid by that ministry. Participants in the institute's courses (i.e., their governments and agencies) pay only for materials and lodging – a total of about $720 a month.[128]

The principal function of the Local Autonomy College is to offer courses of advanced training to local government officials, and to national government officials engaged in activities affecting local administration. It also does the following:

- Conducts research directed towards improving in-service training for government officials, particularly in local training centres
- Conducts basic research on the theory and practice of local government and its operation
- Collects and compiles materials concerning local government and its operation
- Provides technical assistance to the in-service training institutes of local governments.[129]

All but one of the 47 prefectures and most of the major cities have their own institutes providing training for local government officials. The Local Autonomy College specializes in advanced training for the most senior officials, with emphases on public management and policy-making.[130]

Eight courses are offered each year, as indicated in the table on the next page.[131] The instruction is given by 18 full-time staff and 10 part-time staff. There is a heavy reliance on lectures.

Participants are accepted on the recommendation of their mayor or governor. They are usually required to live at the Local Autonomy College, two per room, in dormitories with a total of 160 rooms. The dormitory residence is regarded "as an important process of training, as essential as the formal courses of instruction." The participants are regarded as experienced people who normally have little opportunity to exchange their experiences.[132]

Name of course	Participants	No. participants	Duration in weeks	Subjects [hours]
General training:				
Course I	Deputy division heads	140	26	Law and economics [120] Finance [174] Public Policy [10] Management [44] General culture [20] Case studies [76] Other [36]
Course II	Division heads	140	13	Law and economics [70] Local government [95] General culture [15] Case studies [40] Other [30]
Course III	Division heads of large governments or vice-mayors of smaller governments	60 or 120	4	General management issues [55] Case studies [20] Other [15]
Course for Director-generals	Heads of administration of large governments	57	1	Current issues [20]
Special training:				
Tax administration	Potential senior tax officials	140	4	Tax matters [80]
Public enterprises	Potential managers of local public enterprises	50	4	Public enterprise management [80]
Training officials	Potential trainers of senior officials	50	3	Training matters [60]
Other:				
Course for officials in developing countries	Division heads	12	8	Local government in Japan [112] Field study [48]

No evaluation of the effectiveness of the courses is conducted. The strong competition for places is regarded as proof of success. Also, there is much positive feedback from participants.[133]

A basic problem for the Local Autonomy College is the increase in the quality and scope of the work of the prefectural training institutes, and the consequent loss of its identity as the major training centre for local officials. This is being addressed by reducing the emphasis on details of law, etc., and focusing on public management and policy-making.[134]

Another concern is the inability of the Local Autonomy College to meet the demand for its courses. A review of local government training in Japan published in 1986 anticipated the establishment of the Central Training Institute for Municipal Government Personnel in the fall of 1987.[135] This was to be a joint project of the Japan Association of City Mayors, the Japan National Association of Town and Villages, and the Japan Municipal Development Corporation. Its construction was to be funded from municipal lottery income. It was to focus on the provision of one-week training courses in specific fields such as budget-making, election administration, public relations, and personnel administration. It was to accept up to 8,000 trainees a year, compared with the 700 or so participants annually in the courses of the Local Autonomy College. I did not determine whether this new institute had been established.

The review just mentioned was produced by the EROPA Local Government Centre in Tokyo, which role is served by the Local Autonomy College. EROPA is the Eastern Regional Organization for Public Administration, headquartered in Manila, capital city of the Philippines. EROPA was founded in 1960 for the purpose of contributing to the promotion of social development in the Asian and Pacific region through the development of administrative functions.

As well as pointing out concerns about inadequate opportunities for training, the review criticized training arrangements for local government employees in Japan on the following counts:

- The lack of a system to evaluate training needs and match training objectives to those needs
- The inadequate coordination and cooperation among the organizations responsible for training
- Outdated training methods
- The tendency for smaller local authorities to regard training as "someone else's problem" and consequently to leave too many of their employees inadequately trained.

I was not able to determine the extent to which these criticisms were valid or still apply in 1990.

10. INTERNATIONAL CONFERENCE OF AQUAPOLISES, OSAKA

This conference, also known as ICAP '90, was designed (i) "to promote the restoration of Osaka's 'aquapolis' into an attractive international city rich in greenery," and (ii) to bring together experts from around the world to share experiences relevant to meeting the growing need "for the development of cities where nature and humankind coexist in harmony, where water and greenery are preserved and used to create a comfortable environment, and where waterside and verdant spaces are restored or created to foster scenic beauty."[136] It was organized by the City of Osaka and supported also by the Osaka Prefecture and the national Ministries of Foreign Affairs and Construction.

Participation in the conference was by invitation. Some 30 cities participated including Chicago, Montreal, New Orleans, San Antonio, San Francisco, and Toronto from North America. I joined the delegation from the City of Toronto led by the Mayor and also comprising the Director of Urban Design, Planning and Development Department (Marc Baraness) and the Director of Engineering, Public Works Department (Werner Wichman).

The conference was divided into two parts: the mayors' session and four experts' sessions. The latter were on (i) city protection from water, (ii) improvement of water quality and diversification of water use, (iii) restoration of water space and development of waterside environment, and (iv) greenery conservation and creation. My presentation, "The Toronto Waterfront, 1790-2040," attached as Appendix B, was made in the last of these sessions.

The focus of the conference and its administrative arrangements was on the leaders of the delegations. Plenary sessions consisted largely of prepared statements by the leaders, who were required to sit on stage for a whole day and several hours of another day. Special attention was paid to leaders of delegations from Osaka's eight sister and partner cities: Chicago, Hamburg, Leningrad, Melbourne, Milan, San Francisco, Saõ Paulo, and Shanghai. The experts' sessions mostly comprised local speakers (30 out of 58 from Japan, 17 of the 30 from Osaka) speaking to local audiences. There were few opportunities for discussion.

Toronto was not especially prominent at the conference. However, the mayor reported that a significant objective of Toronto's participation had been

achieved: agreement by Mayor Masanari Nishio of Osaka to attend the Metro World 1991 convention in Toronto next June.

There was much of interest in the presentations. I was struck by the precarious existence of the many major cities in the world that face inundation by water from flooding rivers, tsunami or in some other way, by the extraordinary good fortune of Toronto in being by a large body of fresh water, by the rediscovery in very many places during the last few decades of the attractiveness of a blend of land- and water-based development, by the complementary concern to preserve 'natural' shorelines in and near urban areas, and by the interest in methods of water and erosion control that require little engineering – such as ponding that delays entry of peak storm water runoff into treatment plants.[137]

11. NOTES ON MISCELLANEOUS MATTERS

11.1 Management of construction sites

In my various travels I have been much struck by how much better construction sites in some other countries are managed compared with sites in Toronto – from the point of view of neighbours and passing pedestrians. While in Japan I took many photos of construction sites. They will form one part of a slide presentation to be made to the City of Toronto's City Services Committee on September 14. The other part of the presentation will comprise slides of construction sites in and near downtown Toronto.

The slides of Toronto sites show much making of dust and trekking of mud and debris. Above all, they show interference with the reasonable passage of passers-by, especially the frail, elderly, and otherwise handicapped. (They cannot show the noise and smelly fumes.)

The slides of construction sites in Nagoya, Osaka, and Tokyo show neat and orderly sites that are either free of dust or are extensively shrouded in canvas to avoid escape of dust. They show excavation techniques that avoid contact of truck wheels with dirt, and guards whose job it is to clean up any dirt that happens to escape from a site. They show extraordinary precautions to maintain full passage for passers-by, including the posting of guards to provide assistance and ensure their priority of passage over vehicles entering or leaving a site. Not least, they show the great lengths taken to give construction sites an attractive appearance to the neighbourhood.

11.2 Attitudes about the environment

From what I have read, and from the noticeable changes since my brief experience in Tokyo four years ago, major improvements have been made in the urban environment in Japan. The previous section is an indication of the care taken to reduce distress. There are many other examples. I liked this one from the Tokyo Metropolitan Government's "Guide for Foreign Drivers of Automobiles":

> **Speed Limits**
>
> The maximum speed on the Metropolitan Expressways is limited to 40-80 kilometres/hour depending on the section. High speeds or over weight causes not only danger but noise and vibration.
>
> Drive quietly particularly at night and in the early morning.

Notwithstanding possible improvements, a poll of 67,632 union members across Japan during the last winter demonstrated widespread belief that environmental deterioration is continuing. Of the 57,128 respondents, 89.7% expressed this belief – about the same proportion (89.2%) that believed Japanese politics to be corrupt.[138]

A survey of 3,000 Tokyo residents conducted last fall shows that the concern about the local environment extends to global issues. Of the 2,125 respondents, 73.6 were concerned about ozone depletion in the upper atmosphere, 57.7% about global warming, and 54.0% about acid rain. Also, 79.0% believed environmental preservation should be put ahead of everyday convenience; only 20.2% felt such sacrifices are unnecessary.[139] Similar polls in Canada have found Canadians to be mostly unwilling to suffer major reductions in convenience to benefit the environment, although the survey results are not readily comparable.[140]

Part of making urban life both comfortable and environmentally caring are the extraordinary measures taken to provide public transportation of high quality. When trains and buses are not crowded, they are a joy to ride. The seats are nicely upholstered, the rides are smooth, and every vehicle is air-conditioned – a blessing during the lengthy heatwave that put temperatures above 33°C every day I was in Japan. Trains are frequent and fast. The railway, subway, and bus stations are generally splendid in their design, convenience, and cleanliness.

Sometimes the air conditioning is taken too far, especially when considering Japan's almost complete, vulnerable reliance on imported energy. At the Osaka Garden and Greenery Exposition, guests in outdoor restaurants were cooled with air conditioners built into the canopied tables.[141]

But such extravagance seems to be an exception. While I was in Japan, an agency of the national government asked people to help combat global warming with a series of measures that included watching television for one hour less each day and switching off appliances after use. The report also advocated better use of waste heat from electricity generating stations and putting clocks forward for an hour each summer in order to save energy used in lighting.[142]

11.3 Provisions for handicapped persons

The attempts to create a benign urban environment are especially evident in the provisions for handicapped people. It's not just a question of making it easy for them to pass construction sites. Raised rubber strips are embedded in the surface of most sidewalks and train platforms to help people with poor sight. The raised strips guide a person to ticket windows, ticket machines, and turnstiles, and to train doors. All stations and stops are announced. Moreover, street-crossing signals are auditory as well as visual. Curiously, in view of all this care that had been taken, there were very few handicapped people in evidence.

Indeed, the one place I saw substantial numbers of handicapped people was in Osaka's Shin Sekai district, known as the day-labourers' and dropouts' quarter, the only manifestly working class district I encountered in Japan. More curiously, in spite of the large number of blind and otherwise handicapped people in evidence, this was the only district in which no provision had been made to accommodate them.

11.4 The importance of human resource development

The high regard for in-service training for local government employees was noted in Section 10, during discussion of the Local Autonomy College (notwithstanding the criticisms reported at the end of that section). I encountered other manifestations of this high regard in Japan.

One was the reported practice in the Nagoya administration of requiring junior and middle managers to change jobs every two years. Thus, by the time managers are in their forties and ready for more senior positions, they have experienced several departments and have a comprehensive view of the administration of the municipality.

Another was in Osaka, where I was approached by three junior employees of the Osaka prefecture, all about 30 years old – an engineer, an ecologist, and a women's counsellor – for help with an assignment they had been given during an in-service training course with the prefectural training institute. Their task is to evaluate local government training programs in several selected North American cities – Toronto included. They will be paying brief visits to the cities in October and November as part of the assignment. The challenge is being met with remarkable thoroughness. Clearly the employees will complete the work with an expanded view of local government that will serve them well in the many decades of service in local government they have ahead of them.

This experience and many others confirmed my view that a large part of the reason for the extraordinary resurgence of Japan may very well lie in the excellence of its local governments and, in particular, in the competence and confidence of local government employees. Local government in Canada needs a greater sense of its own worth. One key to achieving this is to provide more opportunities for training, which will serve to enhance both competence and confidence. It is worth noting that the greater emphasis on training and upgrading the work force is usually given as a key reason for the success of Japanese business compared with North American business.[143]

12. ACKNOWLEDGEMENTS

My many thanks are due to all of the people listed in Appendix A for their cooperation and help. I am especially grateful to the following:

- **Bob McArthur** of the City of Toronto's Planning and Development Department for his sage advice and assistance at all stages of the preparation of this visit, for providing much useful material about Japan, and for his introductions to many helpful people, particularly the next two.

- **Harumi Inokuchi** of Toronto, wife of Bob, whose interpretation made easy what might otherwise have been very unproductive telephone calls to Japan during the preparations for the visit.

- **Masako Tanzawa** of Tokyo, friend of Harumi and Bob, whose carefully made arrangements, good company, and skilful interpretation were the key to my productive visit to Tokyo.

- **Timothy Gorham**, on the staff of the Mayor of Nagoya's Office until July 31, now with External Affairs in Ottawa, whose carefully made arrangements,

good company, and skilful interpretation were the key to my productive visit to Nagoya.

- **Rosalind Gilbert** of Toronto, for joining me on this busy trip (at her expense) and sustaining me through all the heat and confusion.

END NOTES

References to "Notes" in the footnotes refer to notes taken during the visit. They are on file with the Canadian Urban Institute with the other sources.

[1]Information from *The Canadian World Almanac and Book of Facts*, Global Press, Toronto, 1990 (CWAB).

[2]The percentage for Japan comes from notes prepared by the International Office of the City of Toronto (Emeline Mok) and from *The Universal Almanac*, Andrews & McMeel, New York, 1990 (UA); for Canada from *Canada's Environment, An Overview*, Environment Canada, Ottawa, 1986" where on p. 14 it says about 25% of Canada's land area is "readily habitable"; and for Britain also from UA. Note that Fodor's Japan 90 (p. xxiii) says that "Japan can cultivate only 16% of the land they live on."

[3]Areas and populations are from CWAB.

[4]CWAB p. 190.

[5]From Akio Morita's autobiography, pp. 151-153.

[6]CWAB p. 191.

[7]At ll.1 per 1,000 pop (CWAB) this would be lower than all but one or two European countries, according to the *New World Book of Rankings*, Facts on File, New York, 1984.

[8]See Japan Times, July 17, July 26, 1990.

[9]CWAB.

[10]These last two points are from *Japan Unescorted*, Kodansha International, Tokyo, p. 10 and conform to my experiences.

[11]According to *Planning of Tokyo*, Tokyo Metropolitan Government, 1990 (POT) p. 2, the population of the Tokyo Metropolitan Region was 30.27 million in 1985.

[12]*Plain Talk about Tokyo*, Tokyo Metropolitan Government (PTAT) p. 3. For various definitions of Tokyo and their populations, see The World Cities, Weidenfeld and Nicolson, London, 1984, p. 180.

[13]Unverified information.

[14]The figure given on p. 1 of *Osaka, Reaching out to the World*, City of Osaka.

[15]Based on the figure of 8.14 million on p. 10 of *Planning for Nagoya*, City of Nagoya, 1989 (PFN).

[16]The description of local government in Japan is based on the appendix to my 1986 report on the visit to China and Japan, checked against *Local Government in Japan*, Local Autonomy College, Tokyo, 1990 (LGJ).

[17]POT p. 16 (1990 figure).

[18]ditto.

[19]All of the foregoing also comes from my 1986 report, also checked.

[20]A thesis suggested in this report – that local government in Japan has considerable autonomy of action compared with Canada – might seem strange to a Japanese expert on local government, who may be more inclined to focus on the constraints upon local power. For example, Professor Akira Nakamura of Meiji University, Tokyo, writing in the *Journal of Management Science Policy Analysis* earlier this year (vol. 7, pp. 191-210) noted "Although local autonomy is one of the hallmarks in the post-war Constitution, the national government in Japan has kept overwhelming legal and financial clout over prefectural and municipal policies. ... On average, it is estimated that 80 per cent of the daily work of prefectural governments is various services delegated from the national governments. The proportion

usually goes down to 40 per cent in the case of municipal governments." My response is that in Canada the proportion is close to 100 per cent for all kinds of local government. There is essentially no autonomy of action from provincial legislatures.

[21]¥5.2 trillion ($42 billion) in 1987 according to *The Fiscal Outlook for the Metropolis of Tokyo*, Tokyo Metropolitan Government, 1989 (FOMT) p. 10.

[22]Based on the small brochure *Sketch of Nagoya*, City of Nagoya, 1990 (SON) p. 9.

[23]POT p. 2 for Tokyo; based on PFN p. 10 for Nagoya; *Greater Toronto Area Urban Structure Concepts Study: Summary*, IBI Associates, Toronto, 1990 (IBIS) Exh. 9 gives 3.733 million for GTA in 1986 – 4 million in 1990 implies a 1.74% annual increase.

[24]SON p. 2 for Nagoya; POT p. 16 for Tokyo; *Metro Toronto Business and Market Guide*, Board of Trade, Toronto (BMG) p. 152 for Toronto.

[25]SON p. 3 for Nagoya; POT p. 16 for Tokyo; BMG p. 158 for Toronto.

[26]SON p. 6 for Nagoya; POT p. 49 for Tokyo; BMG p. 221 for Toronto.

[27]SON p. 1 for Nagoya; POT p. 5 for Tokyo; BMG p. 15 for Toronto.

[28]SON p. 3 for Nagoya; POT p. 16 for Tokyo; population estimate for Toronto plus figures given by the Metropolitan Toronto Planning Department (Joe Silva): gross inflow into Metro '86/'91, 295k/349k; net 147k/174.5k plus 50k students, giving estimate of 220k net inflow for '90.

[29]SON p. 8 for Nagoya, multiplying by household size; ; Joe Silva's estimate (based on?) is $58,000. BMG p. 161 for 1990 says $56,500 for Metro.

[30]PTAT p. 5.

[31]Same sources as for the table.

[32]The Suzuki program (Part 1) was rebroadcast on Aug 19, 1990.

[33]PTAT p. 127 and *Outline of Environmental Work Bureau*, City of Nagoya, 1988 (EWBN) p. 14

[34]PTAT p. 129 and EWBN p. 18.

[35]Data for Nagoya are from the annotated replacement pages provided by Mr. Miyashita for p. 18-19 of EWBN. They assume 311 collection days a year (based on p. 14). Note that the incinerator residue is double counted in the total amount treated.

[36]Data for Tokyo are from p. 5 of *Public Cleansing Services in Tokyo*, Tokyo Metropolitan Government, 1989 (PCST).

[37]The business of sewage sludge is difficult to sort out. The sewage treatment systems seem to be managed privately and the sludge considered as industrial waste – see PCST p. 21, PTAT p. 131-135, and LGJ p. 57-60.

[38]Data for Nagoya come from EWBN pp. 26-27.

[39]Data for Tokyo come from PCST p. 25.

[40]Data adapted from those of the City of Toronto Public Works Department (Peter Gerkis, August 29, 1990) and from the Metropolitan Toronto Works Department (Angelo Bacopoulos, August 31, 1990).

[41]See PCT p. 12 for revenues. No figure available for Nagoya – no revenue presumed.

[42]See EWBN p. 15 for Nagoya and PCST p. 6 for Tokyo.

[43]See EWBN p. 31-32 for Nagoya and PCST p. 4 for Tokyo.

[44]Mr. Miyashita said his bureau handles 3,200 tonnes a day and this is 30% of total, the remainder being industrial (Note 18). Adjusting the 3,200 to the actual 1989 figure of 3,503 you get just over 2.5 million tonnes as the total industrial.

[45]This figure is based on PCST p. 21 measuring the darker bits in the 1987 column in the lower figure and adjusting up. a bit to give 1988 figure.

[46]Based on 1986-89 data on p. 3 of PCST.

[47]This figure comes from Mr. Miyashita (Note 20). Recent data in EWBN suggest a lower rate of increase. For example, 1987-89 total data (adjusting for incinerator residue) in the annotated added p. 18-19 of EWBN give an annual increase of 2.5%. According to the *Globe &*

Mail, Apr 15 1989 p. D5, garbage output in Japan is increasing between 7 and 10 percent annually.

[48]Data adapted from those of Metropolitan Toronto Works Department (Angelo Bacopoulos, Aug 31, 1990).

[49]This is based on generation of about 2.7 million tonnes a year with what are now annual fluctuations.

[50]In the lower figure on p. 21 of PCST there is an indication that about 4 million of the total of industrial wastes are recycled. This is presumably recycled after it is collected as waste or it wouldn't have been recorded as waste in the first place. There may be much more recycled that never gets to be classified as waste in Tokyo, comparable to the 1.5 million tonnes that was found to be recycled in Toronto.

[51]See the notes from discussion with Mr. Miyashita and Mr. Okada (Notes 20 and 100), and also the frequent newspaper reports (e.g., *Globe & Mail*, April 5, 1989; *Washington Post*, April 5, 1987) that 51% of other paper or paper is recycled. Note also report that Japan has imported waste paper (*Washington Post*, May 10, 1987).

[52]See maps on p. 3 of EWBN. (Assumes Ohshimizu site – EWBN p. 8 – is closed.)

[53]EWBN p. 8.

[54]Information about Nariyo from Mr. Miyashita (Note 22).

[55]Mr. Miyashita, Note 23.

[56]Presumably, or else one of its sites would not be more than 40 kilometres away.

[57]PCTS p. 17.

[58]PCTS p. 17. Reason given is a guess. Also see Mr. Okada, Note 102.

[59]Mr. Okada, Note 101.

[60]Mr. Okada, Note 101.

[61]PCST, p. 24.

[62]Mr. Okada, Note 102.

[63]*Planning of Tokyo*, Tokyo Metropolitan Government, 1990, p. 93.

[64]This is based on the paper Financing Office Development, done for the City of Toronto's Planning Dept (November 1986) where $50 per square foot of above ground floor space is given as the guide. There should be a better figure.

[65]*Port of Tokyo 1990*, p. 30

[66]*Tokyo Frontier*, Tokyo Metropolitan Government, 1990, p. 8.

[67]As in the case of the Expo 90 site in Osaka, a dyked part of Osaka Bay used for landfill until 1981, according to a conversation with an EXPO 90 official.

[68]Japan Times, July 21

[69]EWBN, pp. 4-5.

[70]Mr. Miyashita, Note 26.

[71]PCST, pp. 9-11

[72]Comparing data on p. 11 of PCST with p. 11 of *Energy from Waste*, Toronto District Heating Corporation, 1987 (EFW).

[73]See Mr. Okada, Note 97, and PCST, p. 11.

[74]Where did I hear this? In POT, p. 42, there is reference to goal of incinerating all combustible refuse by 1992 by constructing and rebuilding plants.

[75]In *Public Innovation Abroad*, Vol. 14(2), Feb. 1990, p. 7-8.

[76]PCST, p. 12.

[77]See PCST, p. 9, and Mr. Miyashita's comments, Note 24.

[78]Commonly reported but no readily available figure.

[79]For the quote and data see p. 20 of PCST. The comparison is with data in the first table in Section 5.2.

[80]PCST p. 13.

[81]Mr. Miyashita, Note 28.
[82]*Japan Times*, July 17, 1990
[83]On file.
[84]PFN, p. 76.
[85]POT, p. 2.
[86]See particularly the comment by Mr. Tagaki, Note 13.
[87]Figures for Nagoya from PFN p. 9 and p. 11.
[88]Figures for Tokyo from POT, p. 3 and p. 16.
[89]Figures for Toronto from *Regional Briefing Notes*, Municipality of Metropolitan Toronto, p. 2.2.
[90]Based on *Planning for Nagoya* 1984, and also *Urban Development in Nagoya*, p. 11. The map that follows is from p. 18 of *Nagoya: Profile of a City on the Go*.
[91]Mr. Tagaki, Note 10.
[92]Mr. Tagaki, Note 15.
[93]PFN, p. 24 for the Japanese cities; *Transportation for Tomorrow* (p. 13 of Travel Survey Summary for the Greater Toronto Area) for overall trips, and *Key Facts 1988*, Metro Planning Department, p. 5.7 for breakdown between subway and surface TTC rides.
[94]Mr. Tanaka, Note 35.
[95]Mr. Tanaka, Note 34.
[96]Mr. Tanaka, Notes 36 and 37.
[97]Mr. Hayashi, Note 56.
[98]Mr. Tagaki, Note 12
[99]Mr. Tagaki, Note 16. Mr. Hayashi, Note 57.
[100]POT p. 6.
[101]POT p. 7.
[102]POT, p. 16.
[103]POT, p. 79.
[104]POT, p. 74.
[105]POT, p. 79.
[106]Mr. Yoshida, Note 84; *Asahi Evening News*, July 24, 1990; POT, 79.
[107]POT, p. 78.
[108]Fodor, p. 155
[109]Information from the Metro Planning department (Joe Silva, August 31, 1990).
[110]JR Timetable, 1989-90.
[111]POT, p. 11.
[112]TMG building height from *Japan Times*, July 19, 1990; Commerce Court height from *Key Facts 1988* (Metropolitan Toronto Planning Department, p. 4.12).
[113]See *Japan Times*, July 19, 1990, and *Tokyo, Yesterday, Today , and Tomorrow*, Tokyo Metropolitan Government (TYTT) p. 74
[114]POT p. 13.
[115]Mr. Yoshida, Note 93.
[116]Tokyo Teleport Town, back cover.
[117]TYTT, p. 72.
[118]See POT , p. 11; *Japan Times*, July 19, 1990
[119]Mr. Yoshida, Note 88
[120]Mr. Yoshida, Notes 89 and 90.
[121]POT, pp. 71-81.
[122]Japan Times, July 25, 1990
[123]Mr. Yoshida, Note 86.

[124]From the brochure advertising the 1990 two-month training program in regional development planning.

[125]Mr Hayashi, Note 63.

[126]Mr. Kayashi, Notes 48 and 54, and document he provided about the project.

[127]From p. 1 and p. 43 of LGJ.

[128]Mr. Ikawa, Note 66.

[129]From p. 3 and 14 of *Local Autonomy College: Its Organization and Function 1987* (LAC).

[130]Mr. Ikawa, Note 80.

[131]The table is adapted from the information in LAC, p. 7-11, with information too from Mr. Ikawa, Note 75.

[132]LAC, p. 12; Mr. Ikawa, Note 74

[133]Mr. Ikawa, Notes 65 and 73.

[134]Mr. Ikawa, Notes 78 and 80.

[135]On p. 94-95 of the article entitled Training System of the Local Public Service Personnel in Japan by Susumu Takashima, in the volume *Comparative Study on the Training System in the Public Service*, EROPA Local Government Centre, Nagoya.

[136]From the brochure announcing the conference.

[137]I have deposited my copy of all the papers presented at the conference (a four-volume document) with the Royal Commission on the Future of the Toronto Waterfront.

[138]*Japan Times*, July 26, 1990.

[139]From *Nouvelles municipales de Tokyo*,Tokyo Metropolitan Government 40(2), été 1990, p. 8.

[140]E.g., the Angus Reid poll conducted for the Federation of Canadian Municipalities.

[141]*Japan Times*, July 24, 1990.

[142]*Japan Times*, July 17, 1990.

[143]See, for example, the work by Yoshi Tsurumi of the City University of New York and Hiroki Tsurumi of Rutgers University, described in the *Toronto Star* (p. C3) on Sept. 3, 1990.

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APPENDIX B:
PAPER PRESENTED AT THE
INTERNATIONAL CONFERENCE OF AQUAPOLISES
OSAKA, JULY 25-27, 1990

THE TORONTO WATERFRONT 1790-2040

Richard Gilbert
Canadian Urban Institute

TORONTO IN NORTH AMERICA (Slides 1-3)

The Toronto conurbation (population 4 million) is situated in the eastern part of the Great Lakes area, some 550 kilometres north-west of New York City. It lies on the north shore of the western part of Lake Ontario, which is approximately 300 kilometres long and averages 75 kilometres in width. This presentation focuses on the more than 50 kilometres of shoreline of Metropolitan Toronto (population 2.25 million), the regional administration that includes the City of Toronto and five neighbouring cities.

TOUR OF THE PRESENT WATERFRONT (Slides 4-18)

Several slides show the main features of the Metropolitan Toronto waterfront, from west to east.

THE WATERFRONT FROM 1790 TO 1840 (Slides 19-23)

The thickly forested Toronto waterfront was essentially in a natural state in 1790. Over many centuries, perhaps since not long after the ice retreated about 10,000 years earlier, Huron and other native peoples had established Toronto as an important meeting place at the beginning of the overland route from Lake Ontario and the Georgian Bay – hence the name Toronto, the Huronian word for "meeting-place." Europeans are believed to have first visited the area in 1615. During the 17th and 18th centuries, mission, trading, and military posts were established by the Dutch, French, and British, but there was no permanent settlement. The shoreline was intensively used during this period by Huron and then Seneca peoples, but there was little or no disturbance of ecological balances.

Attracted by the natural harbour, and its relative inaccessibility from the hostile United States, the British constructed a fort at the harbour entrance and, from 1793, established a settlement facing the harbour – known as York until 1834 when it was incorporated as the City of Toronto.

By 1840, the city's population was approaching 20,000. There were many much smaller, but busy, ports at the entrance of five of the six rivers that flow into Lake Ontario at this shoreline. Ashbridge's Bay, at the estuary of the Don river, just east of Toronto harbour, was a large marsh.

THE WATERFRONT FROM 1840 TO 1890 (Slides 24-26)

Toronto flourished as a port city, closely connected to its harbour, until 1854, when the railways arrived. The railways were laid along the waterfront, cutting off the city, and causing it to turn its back to the water – a condition that current planning seeks to reverse. Another effect of the arrival of the railways was to centralize activity in Toronto (and in inland places where there were stations and terminals) and end the prosperity of the small ports along the waterfront that had served the rural hinterlands.

The harbour fell into decay separated from the city by a swathe of railway lines sometimes 16 tracks wide. Dredging and extension of the wharfs by some 200 metres did not overcome the barrier of the tracks and the fierce competition from the railway companies, which would often literally block access to the port by stalling trains at the many grade crossings.

A significant event for the waterfront was the breaching of what was the Toronto Peninsula in 1852, forming Toronto Island. By 1880, the channel's width exceeded 1,500 metres. It was stabilized at about 130 metres with the construction of breakwaters. Toronto Island was established as a maintained park with some residential areas, mainly for summer occupation – two areas are still occupied. Ashbridge's Bay, the mouth of the Don River, east of the harbour, was transformed from marsh to cesspool during this period, through the dumping of raw sewage and industrial effluent.

By 1890, substantial development of the city had occurred, mainly westwards on account of the greater railway access from the west. The population of the Toronto region was about 200,000.

THE WATERFRONT FROM 1890 TO 1940 (Slides 27-35)

Ashbridge's Bay was filled in and became an area for port operations and industry. The Don River was diverted into Toronto Harbour. The whole harbour waterfront became an industrial area There was little concern about pollution. The city shoreline of the harbour was extended, also to provide

more land for industry. Further west, substantial lakefill created the Western Beaches recreation area.

In the 1930s, the western part of the Toronto Island was extended and an airport established there that still serves hundreds of short-haul and private aeroplanes each day.

By 1940, the Toronto conurbation area was now home to almost a million people, and extended along much of the waterfront of what is now Metropolitan Toronto. About a quarter of this extent was maintained as parkland. Little was natural open space.

THE WATERFRONT FROM 1940 TO 1990 (Slides 36-38)

Expressway construction in the 1950s further isolated the waterfront from the city. High Park, one of the city's major parks and previously a waterfront park, was separated from the lake with a completeness that even the railways had not achieved.

The eastern part of the Metropolitan Toronto waterfront comprises more-or-less continuous cliffs – the Scarborough Bluffs. As the abutting land became occupied during the 1950s and 1960s, concern grew about the natural erosion of the bluffs, which threatened many homes. A program of erosion control has stabilized much of the shoreline, but is transforming the bluffs above it. Natural erosion made them jagged and bare. Now they are becoming smooth and covered with vegetation.

By 1990, the waterfront of Metropolitan Toronto had become completely developed. Indeed, the developed part of the Toronto region is still expanding and will likely increase in population from the present 4 million to over 7 million during the next 50 years – much more if predicted global warming occurs, on account of the favourable position of Toronto compared with other places in North America. A significant new lakefill project in the 1970s and 1980s – the Leslie Street Spit – has provided the largest area of natural open space along the waterfront. Other land created by lakefill in the east and the west has been used for maintained parkland and for marinas.

THE TORONTO WATERFRONT FROM 1990 TO 2040 (Slide 39)

These are the significant changes to the Toronto waterfront that might be expected during the next 50 years:

- *Creation of natural wetlands at the river estuaries.* These will serve both to provide some purification of river water entering the lake and to restore certain fauna and flora to the area.

- *Redirection of the Don River directly into the lake; creation of a marsh at its mouth and a migration route from the Leslie Street Spit to the Don Valley.* The Don is the region's most polluted river. It presently discharges into the harbour. Discharging it into the lake through a marsh could provide both a marked overall improvement in water quality and a route for migratory birds, which already make extensive use of the wilderness park on the Leslie Street Spit.

- *Stabilization and protection of river valley systems as natural open space.*

- *Designation of several kilometres of the eastern waterfront as natural open space.* Once the extent of erosion control is considered sufficient, much of the eastern waterfront could be left unmanaged, to allow for the establishment of natural ecosystems.

- *Acquisition of several kilometres of the western waterfront for use as maintained park.* The proximity of development and the pressures of population here point to maintained rather than natural open space being the likely designation of the waterfront, most of which should become available for public use.

- *Creation through lakefill of islands and peninsulas for recreational and residential purposes.* This is the most controversial item, on account of the possible pollution of the lake from material used in lakefill. Toronto, like any urban region alongside a large body of water, is limited to expansion in a semicircular arc only, unless lakefill occurs. The growing concern in the Toronto region about the environmental effects of sprawl will make lakefill more attractive, especially if it is estimated that the net environment cost is less than that of alternatives for development. (One plan, for lakefill just west of Toronto Island, proposes creation of a model sustainable community of 25,000 persons that creates no wastes for disposal, has no private automobiles, secures all its energy from the sun and wind, and from differences in upper and lower lake temperature, and yet is socially integrated with the remainder of the region.)

- *Relocation or removal of the Toronto Island Airport.* Several hundred hectares of useful land close to the downtown are occupied by this airport, which has outlasted many proposals for its relocation. Pressure for more development and parkland close to the downtown will likely prevail during the next few decades. If air travel declines, on account of restrictions on fossil fuel use prompted by global warming, the airport may not be replaced. If replacement is considered necessary, one option is to relocate it

to pontoons in Lake Ontario. Such a floating airport could be readily dismantled if a subsequent decline in air travel no longer warrants its continued use.

- *Establishment of extensive public transit along most of the waterfront.* This process has just begun with the inauguration of the Harbourfront streetcar line, the first new streetcar line constructed in Toronto in 60 years. By 2040, most of the more than 50 kilometres of Metropolitan Toronto waterfront should be accessible without recourse to the automobile.

The main, generally shared objectives for the waterfront during the next few decades are to make it publicly accessible – both by bringing it into the public domain and by providing good public transit – and to allow much of it to revert to a natural (i.e., unmaintained) state. Where these objectives are in conflict, the latter are likely to prevail for environmental reasons. Establishment of more water-related ecosystems maintained by naturally acting homeostatic processes is probably vital for all life in the Great Lakes area.

The chief impediments to the achievement of these objectives are the present fragmented responsibility (which is shared among at least eight overlapping authorities), lack of funds, and the need to intensify development within the present built-up area in order to avoid further sprawl in the region. The first impediment is being overcome by cooperation and, above all, by the recognition by the government of the Province of Ontario that it has most of the power required for action and also the responsibility to act.

The chief impetus for action is the Royal Commission on the Future of the Toronto Waterfront, appointed by both the federal government and the provincial government. The Commission made the following interim recommendations in 1989:

> "That, across the entire watershed, a 'green' strategy be devised to preserve the waterfront, river valley systems, headwaters, wetlands, and other significant features in the public interest. Such a strategy would physically link the waterfront to the river valley systems which, in turn, would be linked by the preserved headwater areas. A continuous trail system would guarantee public access to these natural and open spaces. ... A green belt, created from an integrated system of nodes and linkages, [is required] across the Toronto waterfront."

The Commission (known as the Crombie Commission, after David Crombie, its sole member) is due to make its final report in July, 1991.

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